Phasing of North Delta Facilities

Issue Statement:

What is an acceptable method to reconcile (1) the desire of the applicants to secure complete authorizations for the BDCP program as a whole and (2) the desire of the permitting agencies to remain flexible about the design, engineering and operations of the north delta diversions in order to reduce the considerable uncertainties about how they will perform without requiring multiple staged permitting processes and ESA consultations? Is the use of a proposed "phased" approach to the design, construction and operation of the north diversion facilities as described below an acceptable approach for reconciling these two objectives *for purposes of* shaping an effects analysis and the alternatives for the DEIS?

Relationship to critical path items/effects analysis, and DEIS/DEIR:

The best available science on impacts to salmonids from large screened diversions (GCID studies) indicates that there could be a large cumulative impact to salmonid survival through the diversion reach with 5 large diversions in operation. Related cumulative impacts on delta smelt are uncertain at this time. Phasing of intake construction and operations could be a key mechanism to reduce the uncertainty around the cumulative effects of intake operations and improve the overall likelihood of a viable project.

If the principals agree in concept on phasing, then this concept can be incorporated into ICF's Analytical Framework for the Effects Analysis for alternatives greater than 6,000 cfs North Diversion capacity. The analytic framework can use phasing as a mechanism to address uncertainties. This approach could allow the effects analysis to proceed, consistent with best available science, without identifying a red flag associated with cumulative impacts of screens in this reach. The details of this approach would be worked out in the Analytic Framework during the August agency review period. An analysis of the cumulative effects of intake operations, and how those effects fit into a broader suite of conservation actions with both positive and negative effects on salmonid and delta smelt survival, will be included in the Effects Analysis, in both its component parts and its roll-up.

In general, phasing of north delta pumping capacity would be bracketed by the various capacities included in the alternatives under consideration. However, because construction impacts (both social and environmental) would be stretched out over a longer period of time, the details and structure of the NEPA/CEQA analysis might be different under a phased scenario than under a single construction scenario. How to incorporate phasing into the alternatives and what range of assumptions about performance will satisfy NEPA/CEQA needs more discussion at a technical staff level. These analyses have not yet been completed in the DEIS/DEIR, and incorporating this concept into the analytical process should not slow down the completion of the final draft.

Proposal Overview:

The BDCP permit and consultations would include an assumption of a full build out to total capacity (total capacity will be determined later when a preferred alternative is selected in early 2012), with a two phased approach to constructing the individual intake units based on lessons learned during the first construction phase, testing, monitoring, and adaptive management and subject to meeting cumulative reach survival and other performance criteria.

Basic concepts:

1. Conduct pre-construction studies/monitoring per FFTT recommendations to insure best possible design for initial phase and determine baseline conditions in the diversion reach (predator densities, salmonid survival rates, etc.). The FFTT report lists approximately 10 years of studies. While some of these studies (baseline survival monitoring, refugia optimization, etc.) would likely continue up to, and beyond, operation of the facilities, the intent is to complete the engineering design within the next few years and to have the phase one facilities constructed and ready to operate within 10 years.

2. Construct full size main tunnels and forebay to avoid second mobilization costs.

3. Construct 2 intakes (total 6,000 cfs capacity), supporting pumps and connections to tunnels for the initial phase.

4. Establish specific performance criteria and requirements (*i.e.* NMFS/DFG/FWS screening criteria, predation levels, overall survival through reach, etc.). Salmonid and delta smelt survival criteria to be developed using life-cycle modeling with consideration of overall effects of plan implementation (*e.g.* initial per screen juvenile salmon survival of 98% and cumulative reach survival of 95% as compared to baseline survival rates in the reach).

5. The DEIS alternatives could encompass a wider range of performance assumptions and phasing timing or location assumptions in order to capture a full range of potential outcomes for NEPA/CEQA purposes and preserve the ability for continued analysis through the DEIS to refine approaches.

6. Monitor performance and biological effects of operations of Phase 1 per FFTT recommendations.

7. Develop detailed study designs, including specific results criteria that would indicate the new intakes are meeting performance criteria, and commence construction of second phase once those study results are achieved. The FFFT memo includes a broad range from 3 to 15 years[1] of analysis depending on variability in hydrology. The intent is to narrow this range by developing robust study designs and statistical power analyses.

8. Develop a plan to address catastrophic Delta Island flooding by modifying north Delta pumping operations to meet emergency water supply demands until south Delta pumps are back on line.

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[1] There is not agreement amongst the five agency Principals on this range; this needs further discussion and refinement.

[2] Principals agreed to have further staff analysis to expand on these "plan B" concepts.

9. Regarding intake locations, the goal and default assumption is that the project will determine the location of all intakes (for both Phase 1 and possible Phase 2) no later than the Final EIS. For now, intakes 6 and 7 will receive full analysis for biological effects, and conceptually be included in one or more alternatives over 6,000 cfs capacity in the DEIS. If analysis shows these intakes locations are expected to provide benefits to covered aquatic species, then they would advance into one or more of the alternatives in the draft EIS/EIR, for further review prior to the final EIS/EIR. At the final EIS/EIR stage, the applicants and lead NEPA/CEQA agencies would make the determination as to whether to include intakes 6 and/or 7 as one or two of the five proposed intake locations, exclude them from further consideration, or maintain then in the analysis as "alternative locations" to be selected through adaptive management during the initial design study period or following completion of phase 1 of the project (*i.e.* all 7 locations would be fully described in the document, and the final determination would be made after phase 1 results are analyzed).

"Plan B" if performance criteria are not met:[2]

10. Intensify studies to determine cause of increased mortality. If cause can be conclusively linked to a structural or other physical "flaw" in intake design or problem with location, correct that flaw or modify location for second phase of intake construction.

11. Use life-cycle analysis to re-examine the initial performance criteria, overall benefits and impacts of implementing the plan, and use adaptive management program, including an independent science review component, to recommend adjustments to improve the plan. Adjustments could be recommended to other conservation measures to offset reach specific survival impacts, or to the performance criteria themselves, or to both. Further construction would depend on the specific findings of the adaptive management program and life cycle analysis.

12. If neither 9 nor 10 above indicate that phase 2 should be built, maintain 6000 cfs capacity and optimize balance between north and south delta exports to meet the co-equal goals of the plan.

Proposal Variant:

As a variant to this proposal, the project could build three intakes in Phase 1, but only operate 2. The third intake would be constructed to the back side of the levee. In-water construction associated with that intake, and any additional intakes would depend on the results of attaining performance criteria during Phase 1, per process above.

Potential Benefits:

1. Improvement in engineering design for second phase by learning from building first phase.

2. Avoidance of unnecessary intake construction by evaluating tradeoffs in operation between north and south Delta pumping to determine proper balance.

3. Greatly reduces the level of instream construction impacts that would result from

building all 5 intakes at the same time.

4. Cost-savings by using gravity-flow from the forebay in the north Delta to south Delta pumps as a result of diverting less than 7,000 cfs from the Sacramento River (no need for new pumping station until second phase).

5. During the phasing period, total exports would be greatly improved over baseline conditions while south delta pumping would be greatly reduced. The July 2010 sizing analysis found that 6,000 cfs capacity could provide the same total average exports (north and south combined) as 15,000 cfs capacity under Steering Committee Feb. 2010 operations (6.1 maf), while resulting in approximately 1 million acf reduction in average annual south delta exports as compared to baseline (OCAP RPAs) conditions. These relationships hold under the 2025 climate change scenario and the "increased outflow" scenario included in the July 2010 sizing analysis.